

Possible References

17/3,K/1 (Item 1 from file: 350)
DIALOG(R) File 350: Derwent WPIX
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Sender's transmission rate shaping method for use in network communication protocol stack application, involves delaying transmission of acknowledgment to sender for elapsed period, where sender transmits subsequent packet

Patent Assignee: NOVELL INC (NVEL)

Inventor: MAHDAVI J

Patent Family (1 patents, 1 countries)							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 7349337	B1	20080325	US 2003734703	A	20031212	200823	B

Abstract:

NOVELTY - The method involves **receiving** a network packet, in a queue associated with an Internet Protocol (IP) application, from a **sender** over a network, and identifying a desired **transmission rate** for the **sender**. The transmission of an acknowledgment to the **sender** for an elapsed period is delayed by idling an IP layer processing. The processing withholds the network packet from a Transmission Control Protocol (TCP) Layer processing to achieve a desired **transmission rate**, where the **sender** transmits a subsequent network packet on receipt of the acknowledgment.

DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for rate shaping network transmissions. ... USE - Method for shaping a **sender's transmission rate** during a network transaction with a **receiver** within an Internet Protocol (IP) layer or between the IP and Transmission Control Protocol (TCP) layers of a network communication protocol stack application ... ADVANTAGE - The method permits a **receiver** to modify an IP application layer of a network communication stack to control the TCP acknowledgment clocking of the **receiver's** TCP application layer, thus shaping or controlling the **transmission rate** of the **sender** in an efficient manner, without modifying the **sender's** communication techniques. The method enables making adjustments to the **sender** to effectively minimize or avoid wasting **bandwidth**, when the **sender** is implementing an Additive Increase/Multiplicative Decrease (AIMD) technique... Techniques are provided for altering a **sender's** network **transmission rates**. A **sender** transmits a network packet to a **receiver**. The **receiver** selectively **delays** sending an acknowledgment to the **sender** for the received network packet. The selective delay is based on the priority of the **sender** vis-a-vis other **senders** or based on a desired **transmission rate** for the **sender**. The **sender** transmits another network packet after receiving the acknowledgment.

Claims:

What is claimed is: 1. A method for shaping a **sender's transmission rate**, comprising: receiving a network packet from a **sender** over a network; identifying a desired **transmission rate** for the **sender**; and delaying the sending of an acknowledgment to the **sender** for an elapsed period by idling an Internet Protocol (IP) layer processing that withholds the network packet from a Transmission Control Protocol Layer processing in order to achieve the desired **transmission rate**, wherein the **sender** transmits a subsequent network packet upon receipt of the acknowledgment. Basic Derwent Week: 200823

17/3.K/10 (Item 10 from file: 350)
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Data packet transmission rate enhancement method involves increasing transmitted advertised window by maximum of specific segment size for acknowledgement
 Patent Assignee: BERZOSA F (BERZ-I); BURMEISTER C (BURM-I); HAKENBERG R (HAK-I); KLINNER T (KLIN-I); MATSUSHITA DENKI SANGYO KK (MATU); MATSUSHITA ELECTRIC IND CO LTD (MATU)
 Inventor: BERZOSA F; BURMEISTER C; HAKENBERG R; KLINNER T

Patent Family (12 patents, 30 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20040003105	A1	20040101	US 2003437464	A	20030514	200411	B
EP 1376944	A1	20040102	EP 200213310	A	20020618	200411	E
JP 2004032757	A	20040129	JP 2003172213	A	20030617	200411	E
CN 1469601	A	20040121	CN 2003148676	A	20030617	200425	E
KR 2004002604	A	20040107	KR 200339080	A	20030617	200433	E
JP 3617649	B2	20050209	JP 2003172213	A	20030617	200511	E
EP 1376944	B1	20060510	EP 200213310	A	20020618	200634	E
DE 60211322	E	20060614	DE 60211322	A	20020618	200641	E
			EP 200213310	A	20020618		
DE 60211322	T2	20060907	DE 60211322	A	20020618	200660	E
			EP 200213310	A	20020618		
KR 564474	B1	20060329	KR 200339080	A	20030617	200724	E
US 7376737	B2	20080520	US 2003437464	A	20030514	200834	E
CN 100502349	C	20090617	CN 2003148676	A	20030617	200970	E

Abstract:

NOVELTY - The **acknowledgement** containing an advertised window indicating the allowed transmission bit **rate** for received data packets, is transmitted from the receiver to the **sender**. The transmitted advertised window is increased by a maximum of one segment size for acknowledgement.... A method of incrementing a receiver-initiated **sending rate** of data packets transmitted from a sender over a network receiver using Transport Control Protocol (TCP) comprising the step of **sending** an acknowledgement for received data packets from the receiver to the **sender**, wherein said **acknowledgement** contains an advertised window indicating the allowed **sending bit rate** and the step of increasing the advertised window by a maximum of one segment size per acknowledgement.

Claims:

A method of incrementing a receiver-initiated **sending rate** of data packets transmitted from a sender over a network to a receiver using a Transport Control Protocol (TCP) comprising the steps of: **sending** an acknowledgement for received data packets from the receiver to the **sender**, said **acknowledgement** containing an advertised window indicating the allowed **sending bit rate**, and increasing the advertised window by a maximum of one segment size per acknowledgement.... A method of incrementing a receiver-initiated **sending rate** of data packets transmitted from a sender over a network to a receiver using a Transport Control Protocol, TCP, comprising the steps of: **sending** acknowledgements at regular time intervals for received data packets from the receiver to the **sender**, said **acknowledgements** containing an advertised window indicating the allowed **sending bit rate**, storing the **acknowledgements** in a queue before transmission to the **sender**; **sending** an acknowledgement for a portion of a segment to the **sender** when there are less than a predetermined number of acknowledgements in the queue at the next regular time interval; and increasing the advertised window by... 1. A method of incrementing a receiver-initiated **sending rate** of data packets transmitted from a sender over a network to a receiver using a

Transport Control Protocol (TCP) comprising the steps of: **sending** an acknowledgement for received data packets from the receiver to the **sender**, said **acknowledgement** containing an advertised window indicating the allowed **sending bit rate**, and increasing the advertised window by a maximum of one segment size per acknowledgement... ... The invention claimed is: 1. A method of incrementing a receiver-initiated **sending rate** of data **packets transmitted** from a sender over a network to a **receiver** using a Transport Control Protocol (TCP), the method comprising the steps of: sending acknowledgments at regular time intervals for received data packets from the receiver to the sender, said... Basic Derwent Week: 200411

17/3,K/16 (Item 16 from file: 350)
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Transmission control protocol performance improving apparatus for computer network, adjusts use of delayed responses based on monitored network transmission traffic
Patent Assignee: CARLSON D G (CARL-I); CHMIELEWSKI P R (CHMI-I); INT BUSINESS MACHINES CORP (IBM)
Inventor: CARLSON D G; CHMIELEWSKI P R

Patent Family (2 patents, 1 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20020159396	A1	20021031	US 2001843058	A	20010425	200319	B
US 6961309	B2	20051101	US 2001843058	A	20010425	200571	E

Abstract:

NOVELTY - The memory is connected to a processor and a response adjuster (132) monitors network **transmission traffic**. The use of delayed responses is adjusted based on the monitored **transmission traffic**.

Claims:

the apparatus comprising: at least one processor; a memory coupled to the at least one processor; and an acknowledgment adjuster, the acknowledgment adjuster monitoring network **transmission traffic** and adjusting use of delayed acknowledgments (ACKs) based on the network **transmission traffic**.... and an acknowledgment adjuster, the acknowledgment adjuster monitoring time delays in TCP traffic, these delays occurring between the last acknowledgment time of a first data **packet** and receipt of a subsequent data **packet**, and the last acknowledgment time of a first data **packet** and a response data **packet** sent in reply to a first data **packet**, and the receipt of a first data **packet** and the **ACK** of that first data **packet**; and the acknowledgment adjuster adjusting use of delayed **ACKs** based on time delays which occur in the TCP traffic such that if the use of delayed **ACKs** is disabled and the time delay between the last **acknowledgment** time and receipt of a subsequent data **packet** is less than a predetermined time period, use of **delayed ACKs** is enabled; or if the use of delayed **ACKs** is disabled and the time delay between the last **acknowledgment** time and a reply to the first data **packet** with a response data **packet** is less than a predetermined time period, use of delayed **ACKs** is enabled; or if the use of delayed **ACKs** is enabled and the **delay** in sending an **ACK** in response to a first data **packet** exceeds a predetermined time period, use of delayed **ACKs** is disabled... Basic Derwent Week: 200319

17/5/1 (Item 1 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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Rate-based flow control mechanism in broadband networks

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Conference Location: Sydney, Aust **Conference Date:** 19941120-19941124

Sponsor: Institution of Engineers, Australia; University of Sydney; Society of Information Theory & Its Applications 1994

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Publication Date: 19941201

Publisher: IE Aust

Document Type: Conference Paper; Conference Proceeding **Record Type:** Abstract

Language: English **Summary Language:** English

Number of References: 12

We consider end-to-end rate-based flow control in high speed broadband networks. Since ATM is a promising way to achieve an efficient multimedia data transmission in broadband networks, we suppose an ATM network underlies between the user terminals. In our flow control, to prevent the overrun at the receiver and the network congestion, the sender adapts dynamically its packet transmission rate to the service rate of the bottleneck, the congested switch or the receiver. The receiver informs an appropriate rate to the sender with ACK or NACK. We build a queueing model to evaluate the performance of the flow control. From the simulation results, the flow control works effectively to the prevention of the receiver's overrun and also the network congestion. Furthermore, we investigate the effects of the packet size and the file size on the queue length at the bottleneck.

21/5/5 (Item 2 from file: 2)

DIALOG(R) File 2: INSPEC

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Streaming video over TCP with receiver-based delay control

Author(s): Pai-Hsiang Hsiao; Kung, H.T.; Koan-Sin Tan

Journal: IEICE Transactions on Communications, vol.E86-B, no.2, pp.572-84

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Publication Date: Feb. 2003

Language: English

Document Type: Journal Paper (JP)

Unicasting video streams over TCP connections is a challenging problem, because video sources cannot normally adapt to the delays and throughput variations of TCP connections. The paper describes a method of extending TCP so that TCP connections can effectively carry hierarchically-encoded layered video streams, while being friendly to other competing connections. We call the method **receiver-based delay control (RDC)**. Under RDC, a TCP connection can slow down its **transmission rate** to avoid congestion by delaying **ACK packet** generation at the TCP receiver based on congestion notifications from routers. We present the principle behind RDC, argue that it is TCP-friendly, describe an implementation that uses 1-bit congestion notification from routers, and demonstrate by simulations its effectiveness in streaming hierarchically-encoded layered video. (31 refs.)

Full text of article: <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.4.4839>